Title: Deterring Canada Geese From School Playing Fields
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Abstract: This project tested goose deterrent methods, shared the results, and continues to develop a network for long term management. We systematically tested a variety of active and passive deterrents in athletic fields and developed a network of collaborators who are working towards sustainable management. Results will continue to be communicated locally via an on-site workshop and statewide (and possibly broader) through presentations at various stakeholder events.

Background and Justification: Although beautiful in flight and valued as a symbol of the wild, Canada Geese frequenting school athletic fields are a growing concern. New York State Districts who completed an IPM survey in 2001 and 2013 reported nearly a doubling in concern over geese as a pest. Geese were the only pest problem that showed a significant statistical increase between these two surveys. Due to changes in habitat and changing habits of these animals, it is likely that this problem will grow.

Geese on school grounds are not the typical rodent or insect pest and require unique management. In addition, there are limitations to what can be done, due to their protected status under an international bird treaty. This problem is not limited to school grounds, but has been experienced across NY by many communities - urban, suburban and rural.

Specifically, we conducted our work at RCSD's Edison High School. One of the triggering events, in addition to the survey results cited above, was a letter to RCSD's Director of Athletics. This October 2014 letter, from the Rochester Chapter of Certified Football Officials, described the football field conditions as having an "excessive amount of goose droppings spread over the entire field". It goes on to cite instances where players, officials, coaches and ball boys came into contact with goose droppings. In closing, the letter requests that RCSD take measures to "prevent a game being played which exposes players, coaches and game officials to the unsanitary field conditions found". As the result of this letter, RCSD decided that no football or soccer games would be played on the Edison fields during the fall of 2015.

However, this did nothing to address the problem. In addition, these fields are used by the PE classes and sports team practices, so exposure to goose droppings would continue if nothing was done. Edison specifically, and the District as a whole, suffered financially by not playing home games at this location. Not only is there an admission charged, but there are also concessions sold at these games, the proceeds of which go to the home team. Indirect financial losses also occurred when Edison teams had to travel for every contest, both home and away.

Based on the IPM survey and the incident at Edison, this project was designed to accomplish several Community IPM Priorities through the work that was performed. First, this research and development project systematically tested a suite of goose deterrent practices to

evaluate their effectiveness. Keeping geese, and their droppings, away from people also **reduced potential health risks**. According to a National Wildlife Control Training Program, Canada geese may chase and bite people, can be a traffic hazard, and their droppings have been shown to contain disease-causing germs and viruses. This project created information that can be used to **develop community IPM resources and educate others about IPM.** By educating high school Athletic Directors, we will **reach a new audience/develop a new partnership.** By looking at a variety of goose deterrent methods, this project also **refined IPM strategies** by showing the success of each method.

Objectives:

1. **Team building** – We developed a network of collaborators who worked towards sustainable management of geese. At RCSD this team included custodial and grounds staff, coaches and teachers, and members of the community who live near the school and/or are nesting site landowners. The project leaders have already identified major nesting areas in the vicinity. Aspects of this project were also replicated at the Webster Central School District through the efforts of their Buildings & Grounds Staff.
2. **Deterrent testing** – We tested a variety of active and passive techniques.
3. **Outreach** – not only was a goose management plan generated for RCSD's Edison Campus and the Webster Schools, but a framework for other schools was created. The results of this project will be communicated to other school districts, citizen groups, and municipalities.
4. **Project Evaluation** – This project has both short and long-term successes. In the short-term, the presence of geese at the playing fields at Edison High School and at the Webster Schools was evaluated and documented. Long-term, the effective dissemination of what was learned during the field work portion of this project will occur.

Procedures:

1. **Team building** – To date contact has been made with the Towns of Greece and Gates and a healthcare/living facility near the Edison campus, Unity Village, at which a large pond and many geese were observed. Both Gates and Unity Village plan to partner with us in organizing public meetings to discuss long term collaborations such as egg addling. We will also be sharing the flyer and IPM fact sheet with the property owners/tenants (mostly commercial) in the immediate vicinity of Edison, with the intent of hopefully recruiting them to join this collaborative effort. A similar approach in the nearby Town of Brighton has provided long term, sustainable goose problem management (J. Eckler, personal communication).
2. **Deterrent testing** – began in the summer of 2015 and involved the comparison of goose responses to a variety of techniques. This work continued into the fall. The techniques we evaluated include an RCSD-owned drone, radio-controlled ground vehicle, air dancers, RCSD-owned ATV, Mylar tape, and noisemakers. Techniques (such as trained dogs) that

District staff would not readily be able to employ on their own were not evaluated. **Approaches**: We employed a combination of approaches including testing a single technique and testing two techniques simultaneously on two fields. **Measures**: Geese were counted before, during and after the use of the deterrent devices. Goose behavior was also recorded (leave, move, return, etc…). **Timing**: The trials were conducted at different times (early morning, mid-day, and late afternoon/evening) throughout the day so that the variation in goose presence throughout the day was also measured.

In addition to the deterrent testing conducted at Edison, we occasionally tried the radio controlled truck at two other RCSD schools and we were able to establish a partnership with the Webster Central school District. At that District, personnel from the Buildings & Grounds Department tested a deterrent method at their various school campuses where geese were congregating.

3. **Outreach** – We will disseminate what is learned through an IPM Factsheet, and a workshop (for NYS School IPM Committee, Turf & Grounds Expo, Association for Educational Safety & Health Professionals, and/or The Wildlife Society, all in the fall of 2016). In the spring of 2016 it is planned that there will be written outreach (a flyer to neighboring homes and businesses), that describes the negative effects of large goose populations and describes the use of egg oiling. We also plan to work with the town of Gates and the management at Unity Village on outreach such as meetings with citizens, residents and staff.
4. **Project Evaluation** – Each Objective and Procedure presented herein was evaluated during the lifetime of this project. The contribution of the project to sustainable goose management, especially the development of collaborative efforts among stakeholders, will be assessed in subsequent years.

Results and Discussion:

The Edison Campus study area is comprised of a high school athletics field area that includes a baseball field, a soccer field and a football field with a track around the football field with nearby track and field apparatuses (high jump, long jump, etc…). The Webster Central School District study area consisted of athletic fields and open space/school campus areas surrounding the Willink Middle School.The field research aspects of this project started in late August, 2015, around the time of the beginning of the 2015-16 school year. During late August and early September, use of the Edison athletic fields began to occur on a daily basis, primarily by seasonal sports teams practicing. After a few days of observations of up to 50 geese at any one time we decided to initiate the deterrent methods. We also noted that the geese seemed to congregate at the site during the last 1-2 hours of daylight to eat and loiter.

The first deterrent method used was a hand held ‘boom stick’. This gas fueled noise maker (it uses map gas, which is similar to propane but burns at a higher temperature) is about

four feet long and four inches in diameter. The noise is somewhat directional in that the device can be 'pointed' towards where you would like it to be loudest. On more than one occasion of using the 'boom stick' we observed that the geese had to be rather aggressively followed while repeatedly firing the device. In addition, the geese did not take flight and leave the area until we got within approximately 15 yards of the flock.

Not only was this method somewhat time consuming and not especially effective, but it also required an additional step that the other methods did not. Since this device makes a gunshot like noise, prior to every use of it we informed the local police department. In an urban area such as Rochester we felt this was the responsible thing to do. Additionally, there are 'gunshot microphones' placed across the city and we felt it would be best to alert law enforcement to our actions before the noises were recorded by these public safety devices.

In mid-September we began to test the radio-controlled vehicle. The vehicle chosen was the 'monster truck' variety with large tires that were under-inflated and had large tread. While the athletic fields are generally well maintained, we wanted to make sure that we used a vehicle that could move quickly up and down the steep slopes that separated the fields, and could move through turf that had not been recently mowed.

Learning to operate this vehicle was easy and took very little time. It also worked dependably despite getting wet and muddy on several occasions. Having a second battery on hand, as well as a dual battery charger made using and preparing the device easier and less time consuming.

The effectiveness of the 'monster truck' was excellent. Not only did the geese that were chased/herded quickly take wing, but the nearby geese who were watching only had to see the truck turn in their direction and they too quickly flew away. It was my observation on this and all other instances, despite the device, that once the geese were made to take wing and leave the site they did not return for the remainder of that day.

The other radio controlled deterrent device tested was a quad copter which was a four bladed helicopter-like vehicle that looked similar to a drone but was not camera or GPS equipped. This device was significantly more difficult to learn to operate than the truck and it was very light so if there was even a light breeze it would be blown off course. In addition, if the device landed or crashed the operator had to manually re-launch it which could take some time depending on where it went down. It was effective in getting the geese to take flight but their reaction to it was not as immediate or 'panicked' as it was in response to the truck.

Following the radio controlled vehicle usage, we asked the custodial staff at Edison to use their golf cart to regularly go onto the fields and harass the geese. They reported (we were able to join them on one occasion during a mid-morning visit) that the geese responded quickly to being chased by the manned vehicle and flew away. However, as one would imagine, being able to stop other tasks and take the vehicle on the field was not especially easy or convenient.

Later in the fall, during the October-November timeframe we noticed an increase in the goose droppings on the running track around the football field. The geese were at the site during times that the staff were not around to observe them so we decided the next device to be tested

would be the air dancer. The air dancer is an electrically powered motor/fan that inflates a large nylon tube which then moves in a random fashion. The running track/football field is located in proximity to a lockable field house with electrical service, so the Edison custodial staff were able to move the air dancer out onto the long jump area early each morning when they arrived and take it in when they left for the day in the late afternoon. Based on a small amount of dropping cleaning/clearing that we did, it appeared that the air dancer was effective in deterring the geese from this area of the athletic fields.

During the use of the air dancer we wanted to try a second device. We observed on at least one occasion that while the air dancer seemed to be keeping geese off the football field, and possibly the adjacent soccer field, the baseball field did still see a small goose presence. The building custodial staff, when they were placing the air dancer for the day, would put a small rotating reflector device on the pitcher's mound of the baseball field . It was not easy to determine if the reflector was effective because we saw very few geese on site during this final portion of the study.

We were successful in recruiting another school district partner in our efforts. Webster Central School District has at least two campus areas that have experienced large numbers of geese in the fall. We shared both the boom stick and the remote control truck with them. They also had their own golf cart/ATV that they were able to use. Their experiences with the deterrent devices was such that the radio controlled truck was much more effective and favored by their grounds staff. The boom stick 'shotgun noise' was felt to be potentially disruptive and disturbing, especially given how close to their school buildings the geese sometimes came. Chasing the geese with a golf cart or ATV was also not something their staff was comfortable with, given the potential negative impression of harassment that parents, staff, students or the public might have. However, given the discreet nature of the use of the radio controlled vehicle, they felt that method worked for them very well. In fact, after using the truck they asked that we not share any of the other devices with them and they purchased their own radio controlled vehicle for using for this purpose.

Towards the end of the fall we began seeing geese less frequently. We do not know if this is because of the effectiveness of the devices, the migratory patterns or other factors. It should be noted that the previous fall, the complaint received by the Athletic Director at Edison occurred in the late fall time frame.

Summarizing our experience to date, technique efficacy is not the only important criteria. The technique must also fit into the desires and workday of school staff. It was our observation that in most instances, the radio controlled vehicle was relatively easy for staff to secure, use effectively with little interference by others, and easy to maintain and store. Using an ATV sometimes worked at Edison, but was not an option at the other RCSD sites or at Webster campuses. Moving the air dancer into and out of over-night storage was both time consuming and had to be done at a specific time of day, whether there were geese present or not. The radio controlled quad-copter was not easy for untrained staff to use, and uncontrollable in even a light wind.

Project Location:

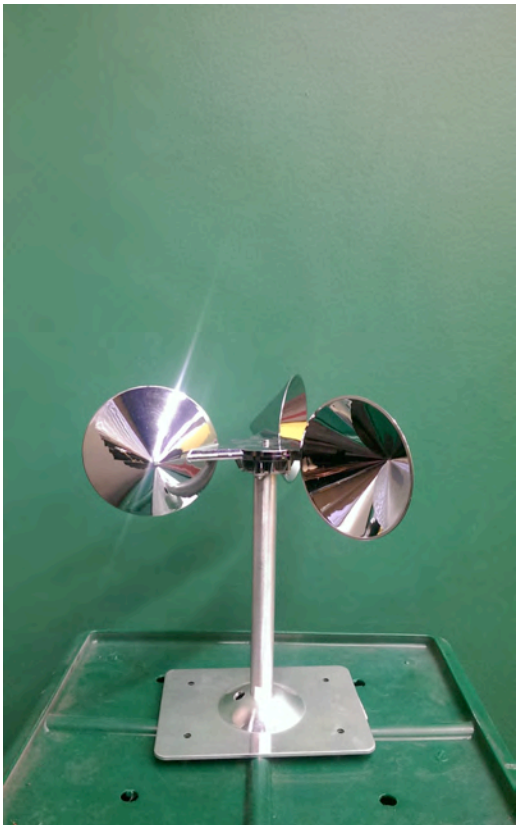
While this Research & Development Project took place in two public school districts in Monroe County, the implication for these findings is widespread – across the state as well as any area in North America where the pressures of Canada Goose population interactions with humans are occurring.

Attached are photographs of the various devices tested as well as a video of the air dancer and of the radio controlled truck.

Quad Copter Drone

Radio-controlled Model Truck

Air Dancer



Rotating Reflector

Boom Stick

Video of radio controlled truck use